WHAT IS CLAIMED IS:

1. A projection apparatus for projecting a multicolor image comprising:

a first light modulation assembly comprising:

a first spatial light modulator for modulating light having a first wavelength and which forms a light source to form a first image;

a first magnifying relay lens for focusing and relaying said first image;

a second spatial light modulator for modulating light having a second wavelength and which forms a second image;

a second magnifying relay lens for focusing and relaying said second image;

a third spatial light modulator for modulating light having a third wavelength which forms a third image;

a third magnifying relay lens for focusing and relaying said third image;

a dichroic combiner which form a multicolor image by combining said first, second, and third images; and

a projection lens for projecting said multicolor image.

2. The projection apparatus according to claim 1 wherein said first wavelength is red, said second wavelength is green, and said third wavelength is blue.

3. The projection apparatus according to claim 1 wherein said spatial light modulator is a reflective LCD.

4. The projection apparatus according to claim 1 wherein said spatial light modulator is a transmissive LCD.

5. The projection apparatus according to claim 1 wherein said spatial light modulator is a digital micromirror device.

6. The projection apparatus according to claim 1 wherein said light source comprises a lamp.

7. The projection apparatus according to claim 1 wherein said light source comprises a color filter.

8. The projection apparatus according to claim 1 wherein said light source comprises a laser.

9. The projection apparatus according to claim 1 wherein said light source comprises an LED.

10. The projection apparatus according to claim 1 further comprising a dichroic separator for providing said light source.

11. The projection apparatus according to claim 1 further comprising a polarizer for conditioning the light from said light source.

12. The projection apparatus according to claim 1 wherein said magnifying relay lens provides 2X magnification.

13. The projection apparatus according to claim 1 wherein said magnifying relay lens is double-telecentric.

14. The projection apparatus according to claim 1 wherein said dichroic combiner is an X-cube.

15. The projection apparatus according to claim 1 wherein said dichroic combiner is a Philips prism.

16. The projection apparatus according to claim 3 wherein said first light modulation assembly, second light modulation assembly, and third light modulation assembly each further comprise a polarizing beamsplitter for directing said incident light having a predetermined polarization state to said spatial light modulator and for directing said first image to said magnifying relay lens.

17. The projection apparatus according to claim 1 wherein said first light modulation assembly, second light modulation assembly, and third light modulation assembly each further comprise a polarizer.

18. The projection apparatus according to claim 1 wherein the optical axis of said magnifying relay lens for said first light modulation assembly and the optical axis of said magnifying relay lens for said second light modulation assembly are coaxial with the optical axis of said projection lens.

19. The projection apparatus according to claim 1 wherein said magnifying relay lens for said first light modulation assembly is fabricated to be substantially identical to said magnifying relay lens for said second light modulation assembly.

20. The projection apparatus according to claim 1 wherein said multicolor image formed by said dichroic combiner is a real image.

21. The projection apparatus according to claim 1 wherein said multicolor image formed by said dichroic combiner is a virtual image.

22. A projection apparatus for projecting a multicolor image, the apparatus comprising:

a first light modulation assembly for forming a magnified image having a first wavelength, a second light modulation assembly for forming a magnified image having a second wavelength, and a third light modulation

assembly for forming a magnified image having a third wavelength, wherein each modulation assembly is similarly constructed and comprises:

(a) a light source for directing incident light towards a polarizing beamsplitter, said polarizing beamsplitter transmitting light having a first polarization and reflecting light having a second polarization;

(b) a liquid crystal device for modulating incident light having said second polarization to form a first image; and

(c) a magnifying relay lens for focusing and relaying said first image towards a dichroic combiner in order to form a magnified real image of said first image;

said dichroic combiner forming a multicolor image by combining said magnified real image having said first wavelength, said magnified real image having said second wavelength, and said magnified real image having said third wavelength; and

a projection lens for projecting said multicolor image toward a display surface.

23. The projection apparatus according to claim 22 wherein said first wavelength is red, said second wavelength is green, and said third wavelength is blue.

24. The projection apparatus according to claim 22 wherein said light source comprises a lamp.

25. The projection apparatus according to claim 22 wherein said light source comprises a color filter.

26. The projection apparatus according to claim 22 wherein said light source comprises a laser.

27. The projection apparatus according to claim 22 wherein said light source comprises an LED.

28. The projection apparatus according to claim 22 further comprising a dichroic separator for providing said light source.

29. The projection apparatus according to claim 22 further comprising a polarizer for conditioning light from said light source.

30. The projection apparatus according to claim 22 wherein said magnifying relay lens provides 2X magnification.

31. The projection apparatus according to claim 22 wherein said magnifying relay lens is double-telecentric.

32. The projection apparatus according to claim 22 wherein said dichroic combiner is an X-cube.

33. The projection apparatus according to claim 22 wherein said dichroic combiner is a Philips prism.

34. The projection apparatus according to claim 22 wherein said first light modulation assembly, second light modulation assembly, and third light modulation assembly each further comprise a polarizer.

35. The projection apparatus according to claim 22 wherein the optical axis of said magnifying relay lens for said first light modulation assembly and the optical axis of said magnifying relay lens for said second light modulation assembly are coaxial with the optical axis of said projection lens.

36. The projection apparatus according to claim 22 wherein said magnifying relay lens for said first light modulation assembly is fabricated to

be substantially identical to said magnifying relay lens for said second light modulation assembly.

37. The projection apparatus according to claim 22 wherein said multicolor image formed by said dichroic combiner is a real image.

38. The projection apparatus according to claim 22 wherein said multicolor image formed by said dichroic combiner is a virtual image.

39. A method for projecting a multicolor image toward a display surface, the method comprising:

(a) forming, from an incident light of a first wavelength, a magnified real image having said first wavelength using the steps of:

(a1) modulating said incident light of said first wavelength at a first spatial light modulator to form a first image having said first wavelength;

(a2) magnifying and relaying said first image having said first wavelength towards a dichroic combiner to form said magnified real image having said first wavelength;

(b) forming, from an incident light of a second wavelength, a magnified real image having said second wavelength using the steps of:

(b1) modulating said incident light of said second wavelength at a second spatial light modulator to form a first image having said second wavelength;

(b2) magnifying and relaying said first image having said second wavelength towards said dichroic combiner to form said magnified real image having said second wavelength;

(c) forming, from an incident light of a third wavelength, a magnified real image having said third wavelength using the steps of:

(c1) modulating said incident light of said third wavelength at a second spatial light modulator to form a first image having said third wavelength;

(c2) magnifying and relaying said first image having said third wavelength towards said dichroic combiner to form said magnified real image having said third wavelength;

(d) combining, along a common optical axis, said magnified real image having said first wavelength, said magnified real image having said second wavelength, and said magnified real image having said third wavelength to form a multicolor image for projection; and

(e) projecting said multicolor image toward the display surface.

40. The method of claim 39 wherein the step of modulating said incident light of said first wavelength comprises the step of modulating an LCD spatial light modulator.

41. The method of claim 39 wherein the step of modulating said incident light of said first wavelength comprises the step of modulating a digital micromirror device.

42. The method of claim 39 wherein said incident light of said first wavelength is from a lamp.

43. The method of claim 39 wherein said incident light of said first wavelength is from a laser.

44. The method of claim 39 wherein said incident light of said first wavelength is from an LED.

45. The method of claim 39 wherein the step of combining said magnified real image having said first wavelength, said magnified real image having said second wavelength, and said magnified real image having said third wavelength comprises the step of using a dichroic combiner.

46. The method of claim 45 wherein the step of using a dichroic combiner comprises the step of using an X-cube.

47. The method of claim 45 wherein the step of using a dichroic combiner comprises the step of using a Philips prism.

48. The method of claim 39 wherein the step of modulating said incident light of said first wavelength comprises the step of modulating a red light, wherein the step of modulating said incident light of said second wavelength comprises the step of modulating a green light, and wherein the step of modulating said incident light of said third wavelength comprises the step of modulating a blue light.

49. A projection apparatus comprising:

a first light source having a first wavelength;

a first spatial light modulator for modulating incident light from said first light source to form a first image;

a first relay lens for focusing and relaying said first image;

a second light source having a second wavelength;

a second spatial light modulator for modulating incident light from said second light source to form a second image;

a second relay lens for focusing and relaying said second image;

a third light source having a third wavelength;

a third spatial light modulator for modulating incident light from said second light source to form a third image;

a third relay lens for focusing and relaying said third image;

a dichroic combiner which forms multicolor images by combining said first, second, and third images; and

a projection lens for projecting said multicolor image.

50. The projection apparatus according to claim 49 wherein said spatial light modulator is a reflective LCD.

51. The projection apparatus according to claim 49 wherein said spatial light modulator is a transmissive LCD.

52. The projection apparatus according to claim 49 wherein said spatial light modulator is a digital micromirror.

53. The projection apparatus according to claim 49 wherein said light source comprises a lamp.

54. The projection apparatus according to claim 49 wherein said light source comprises a laser.

55. The projection apparatus according to claim 49 wherein said light source comprises an LED.

56. The projection apparatus according to claim 49 wherein each of said relay lens provides magnification.

57. The projection apparatus according to claim 49 wherein said dichroic combiner is an X-cube.

58. The projection apparatus according to claim 49 wherein said dichroic combiner is a Philips prism.

59. The projection apparatus according to claim 49 wherein said multicolor image formed by said dichroic combiner is a real image.

60. The projection apparatus according to claim 49 wherein said multicolor image formed by said dichroic combiner is a virtual image.

61. A projection apparatus for projecting a multicolor image comprising:

a first light source having a first wavelength;

a first means for modulating incident light from said first light source to form a first image;

a first means for focusing and relaying said first image to form a magnified real image of said first image;

a second light source having a second wavelength;

a second means for modulating incident light from said second light source to form a second image;

a second means for focusing and relaying said second image to form a magnified real image of said second image;

a third light source having a third wavelength;

a third means for modulating incident light from said third light source to form a third image;

a third means for focusing and relaying said third image to form a magnified real image of said third image;

a dichroic combiner which form a multicolor image by combining said first, second, and third magnified images; and

a projection lens for projecting said multicolor image.

62. The projection apparatus according to claim 61 wherein at least one of said modulating means is a reflective LCD.

63. The projection apparatus according to claim 61 wherein at least one of said modulating means is a transmissive LCD.

64. The projection apparatus according to claim 61 wherein at least one of said modulating means is a digital micromirror.

65. The projection apparatus according to claim 61 wherein at least one of said light source comprises a lamp.

66. The projection apparatus according to claim 61 wherein at least one of said light source comprises a laser.

67. The projection apparatus according to claim 61 wherein at least one of said light source comprises an LED.

68. The projection apparatus according to claim 61 wherein each of said focusing and relaying means provides at least 2x magnification.

69. The projection apparatus according to claim 61 wherein said dichroic combiner is an X-cube.

70. The projection apparatus according to claim 61 wherein said dichroic combiner is a Philips prism.

71. The projection apparatus according to claim 61 wherein said multicolor image formed by said dichroic combiner is a real image.

72. The projection apparatus according to claim 61 wherein said multicolor image formed by said dichroic combiner is a virtual image.

73. A projection apparatus comprising:

at least one light source having a first wavelength;

at least one spatial light modulator for modulating incident light from said first light source to form a first image;

at least one relay lens for focusing and relaying said first image; and

a projection lens for projecting said image.

74. The projection apparatus as in claim 73 comprising:

a second light source having a second wavelength;

a second spatial light modulator for modulating incident light from said second light source to form a second image;

a second relay lens for focusing and relaying said second image; and

a dichroic combiner which forms multicolor images by combining said first and second images.

75. A projection apparatus comprising:

a first light source which produces light having a first wavelength;

a first spatial light modulator for modulating incident light from said first light source to form a first image;

a first double-telecentric magnifying lens;

a second light source which produces light having a second wavelength;

a second spatial light modulator for modulating incident light from said second light source to form a second image;

a second double-telecentric magnifying lens;

a third light source having a third wavelength;

a third spatial light modulator for modulating incident light from said second light source to form a third image;

a third double-telecentric magnifying lens;

a dichroic combiner which forms multicolor images by combining said first, second, and third images from said first, second, and third double-telecentric magnifying lenses; and

a projection lens for projecting said multicolor image.